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Vegetable Gardening Practices

for the Prairie Provinces



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VEGETABLE GARDENING PRACTICES FOR THE PRAIRIE PROVINCES¹

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Introduction

This publication describes practices that are a result of 30 years of tests and observations by the author, and a number of years of satisfactory use at the Canada Experimental Farm, Morden, Manitoba. The information supplements Canada Department of Agriculture Publication 1033, "Growing Vegetables in the Prairie Garden", and replaces Publication 619, "Hints on Dry Land Gardening".

Vegetable varieties recommended for the Prairie Provinces are not listed here. These may change from time to time, and any list may soon become unreliable. The gardener should obtain a revised list from either the nearest experimental farm or agricultural representative.

The value of trees for sheltering the prairie garden should be emphasized; reference is made to their use in shelter belts. More detailed information is available from the Forest Nursery Station, Indian Head, Saskatchewan.

Irrigation has assumed considerable importance in vegetable production. Instructions on the proper use of supplemental water are mentioned briefly in this bulletin, and in greater detail in Canada Department of Agriculture Publication 851, "Irrigating the Prairie Home Garden".

The benefits of garden vegetables can be extended into the winter by suitable storage. The preparation of vegetables for storage is described here, but for details on the erection of storage structures the reader should obtain Canada Department of Agriculture Publication 743, "Construction and Operation of Home Storage for Fruits and Vegetables". All publications mentioned can be obtained from the Information Division, Canada Department of Agriculture, Ottawa.

¹Contribution No. 34, Experimental Farm, Research Branch, Canada Department of Agriculture, Morden, Manitoba.

Adapted Varieties and Good Seed

To have a productive vegetable garden, one must use varieties adapted to the local climate and the soils. Grow only those that have been thoroughly tested and are known to be productive in your locality. Follow the recommendations of the nearest horticultural research institution where varieties are thoroughly tested for their cultural suitability.

A vegetable variety may be early in one part of Canada, but this does not mean it will be equally early in all other localities. Some varieties are also sensitive to specific soil conditions, and so may respond differently on varied soil types and in various locations. For example, varieties suited to acid soils do not thrive on the high-lime soils that prevail in the Prairie Provinces.

Good seed is essential for a successful garden. It should be uniform in size, be large for the kind of vegetable, and germinate well. Early seedling vigor, on which the productivity and early maturity of the full-grown plant is based, depends on the freshness and viability of the seed. Purchase only the best obtainable. The cost is a small item when compared to the value of high-quality vegetables.

Vegetable seed that is held over for one or several years should be tested before sowing. Do this by placing 100 seeds in a moist cloth. Roll it up snugly and keep in a warm place at approximately 75°F. until the seed germinates. The sprouts on germinating seed should be uniform and have a thick, robust appearance. At least 75 per cent germination is required for satisfactory results.

Gardening organizations sometimes find it both desirable and profitable to buy vegetable seed in bulk for distribution to members. Individual gardeners may also find that it pays to buy bulk lots of special vegetable varieties that are difficult to obtain every year. Such seed can be kept for several years in metal boxes that can be closed tightly. Store them in a dry place and hold temperatures close to 50°F.

Vegetable seed varies in the length of time its viability can be retained, even under good storage conditions. When it is held over it is necessary to know the average duration of viability of the different kinds. Seed of different species will remain viable in good storage for the following periods:

One year	—	parsnip
Two years	—	parsley, peppers and onions
Three years	—	peas, beans, carrots, celery, sweet corn, tomatoes, asparagus
Four years	—	beets, cabbage, cauliflower, eggplant, pumpkins, squash, radishes, turnips, rutabagas.
Five years	—	cucumbers, melons
Six years	—	lettuce

Vegetables in the home garden frequently are grown from hybrid seed. Hybrid vegetables are often impressive in appearance and productivity. Gardeners may be so well impressed that they will believe their best chance of obtaining similar results in successive seasons is to save their own seed from the choicest plants. However, this seed should *not* be saved, because it will not breed true; the results will be highly variable plants, inferior in quality and productivity to those grown in the previous season.

Planning the Garden

Garden planning is just as necessary for success in small gardens as it is in commercial production. It includes preparatory work, choosing a site, deciding on the size of the garden, and providing shelter. A desirable garden arrangement outlined on paper is necessary to good planning.

Location and size of the garden — Choice of a good site is imperative. Important points to consider are: proximity to the home, soil fertility and texture, and the availability of water for irrigation.

Generally, the garden is located close to the home for convenience. It is more important, however, to locate on land that is fertile and of good texture, and to ensure this it may even be necessary to choose a site at some distance.

Select a medium-heavy loam soil if possible. Sandy loam is a good second choice; although it may be low in fertility, it can be successfully enriched by adding manure or compost. A heavy clay soil is not desirable, although it can be fitted reasonably well by deep tillage and incorporation of fibrous material.

Consider the feasibility of irrigation when planning a garden. Locate the site within reach of a readily available water supply if possible. Pumps and plastic tubing are available at reasonable cost to carry water considerable distances, making it easier to choose a good location for the garden.

Dry prairie sloughs will serve as suitable garden locations in areas where rainfall is limited, and irrigation not available. In most years there is ample soil moisture here to produce a good vegetable crop. Place part of the garden on land which may be under water in a rainy season, and the remainder on land that is normally above the water line. Wet or dry, a good garden can be obtained in most years.

Summer-fallowing aids vegetable growing in the dry-land garden. Set aside enough land so that one half of the garden can be summer-fallowed while the other half is being cropped. To improve soil texture and fertility, incorporate manure and strawy material into the summer-fallowed land. Do this early in the season, preferably the first part of June. Use as much material as can be conveniently worked into the soil by deep plowing, or by mixing it into the soil with a rototilling-type implement; as much as four bales of short straw, or their equivalent, per 1,000 square feet of garden area is suggested. Nitrogen fertilizer, such as ammonium sulphate, should be spread over the straw before tilling; a rate of 4½ pounds for every four bales of straw, will speed decay.

In making the garden plan, allow for future increase in size, keeping in mind that trees, a permanent feature, will be located on the perimeter. The average

prairie garden is about $\frac{1}{2}$ acre in size; where the summer-fallow plan is used an acre of land would be needed.

Shelter for the garden — Provide for adequate protection from prevailing winds. Small vegetable plants are easily damaged early in the season by wind action and drifting soil. Trees provide the best shelter, and therefore should be an essential part of long-range garden planning. Be sure to allow enough land for the spread of shelter belt tree roots. It is generally considered that roots grow out laterally from the trunk a distance equal to the tree's height. Vegetables will not succeed in land permeated by tree roots. Deep-rooted trees, such as caragana, green ash, American elm, and Villose lilac, are among the best for garden shelter belts.



Figure 1. — Lath-type snowfence provides an excellent temporary windbreak.

Temporary shelter is necessary until the trees are tall enough to serve as windbreaks. Snowfences are effective for this purpose and may be set up singly or doubled, using an insert of heavy building paper. The paper is particularly beneficial for it reflects heat from the sun for vegetables that require high temperatures, such as tomatoes, peppers and melons. Tall-growing corn and sunflowers planted on the garden perimeter are good wind barriers during July and August. They may also trap daytime heat, encouraging rapid growth and early maturity.

The garden plan — It is much easier to visualize all the advantages of a garden when a line drawing of the planting arrangement is prepared. The quantities of vegetables required for fresh use, canning and storage can be estimated

with fair accuracy by allocating a definite area in the garden for each kind. Plant-spacing is important; Canada Department of Agriculture Publication No. 1033 contains a list of recommended planting distances for vegetable growing in prairie gardens. A plan also lets the gardener place the various kinds of vegetables in the best relationship to each other, as to their plant height and spread. Proper spacing encourages full development and productivity of the plants.

Plant perennials, such as rhubarb, asparagus, chives, and horse radish, at one side or one end of the garden. Sweet corn is usually tall-growing and since it may shade shorter vegetable plants should also be located at the side. Place vegetables such as potatoes, tomatoes, beans, peas, carrots, lettuce, radishes, and onions next to corn, in that order. Since vine vegetables such as cucumbers, melons and squash normally cover considerable garden area, locate them at least 12 feet from the bush-type vegetables and those of restricted growth, such as beans, carrots, beets, radishes, onions and lettuce.

The garden rows are normally planted from north to south, which permits the sun to warm up the soil on both sides of each row and encourage early plant maturity. This warming tends to dry the plants quickly following rain and heavy dew, discouraging plant diseases. Other factors may have to be considered when placing the direction of rows: the slope of land and the length and width of the garden. With the rows at right angles to the slope, soil erosion is controlled during heavy rains. Rows the length of the garden, especially over 100 feet, facilitate cultivating and other mechanized work.

Soil Preparation

Soil in good physical condition is essential for high productivity and good quality in vegetables. Till clay-type soil deeply, preferably in the fall, and leave it in a loose condition. Sandy soil may be worked in the spring and should be packed as soon as possible.

Pre-planting tillage — If the garden plan does not include a summer fallow area, soil amendments such as old manure or compost should be incorporated before planting. Do not use fresh manure or straw.

If the land is plowed, place the manure on top of the soil immediately after plowing. Harrow the following spring to incorporate the manure with the topsoil. This will improve the physical texture of the soil and increase its moisture absorption capacity.

One of the best deep tillage implements for the garden is the soil pulverizer known as the rototiller or rotovator. This stirs soil to a depth of 6 to 8 inches, and amendments such as manure or compost applied beforehand are thoroughly mixed into the topsoil. Desirable soil moisture absorption and maximum plant rooting are encouraged.

Deep-tilling implements are generally available in several sizes, from farm tractor mounted models, illustrated in Figure 2, to small garden tractor types.

Compost as a soil amendment and substitute for barnyard manure — Limited supplies of manure on most farms may cause difficulty in providing humus for



Figure 2. — The rotovator develops a smooth and desirable seedbed up to 6 inches deep.

the garden. Compost made from materials such as oat and barley straw, tree leaves, and immature or green weeds is a good substitute for manure. Stack the prepared materials in trim, compact piles at least 12 feet wide by 20 feet long. Place materials in layers 2 feet deep and salt each layer with 4 to 5 pounds of ammonium sulphate. Water thoroughly and compact by tramping, especially around the sides of the pile. Do this early in June. It takes approximately a year to prepare good compost, which should have a crumbly texture and a chocolate-brown color.

Four tons of dead leaves and straw make approximately $\frac{1}{2}$ ton of compost. An amount to fill a half-ton truck is enough to treat 1,000 square feet of land.

Chemical fertilizers — Most garden soils are fertile, especially if compost or other soil amendments are used; consequently, standard chemical fertilizers may not produce much response in growing vegetables. A special fertilizer, however, such as the 10-52-17 transplanter type, may be applied in solution early in the season to encourage early ripening in tomatoes. It will also stimulate vegetable plants grown from seed and transplants. Mix $\frac{1}{2}$ pound of fertilizer in 15 gallons of water and apply one cupful to each transplant, or pour into trenches at 2- to 3-foot intervals on both sides of the seeded rows. The trenches should be 2 inches deep and 2 inches from the plants. One application of the solution will be enough.



Figure 3. — Oat and barley straw is useful for composting. It is stacked for this purpose by placing successive layers 2 feet deep. Each layer is fertilized with nitrogen, thoroughly watered and tramped.

Growing Transplants

It is necessary to transplant to be sure of an early harvest of tomatoes, celery, peppers, eggplant and early cabbage in the Prairie Provinces. To produce transplants, a hotbed or heated frame is essential equipment. The manure-heated hotbed has given excellent results, but the scarcity of barnyard manure makes it impractical, and electricity is now generally used.

Electricity for heating plant-growing frames — A simple and inexpensive method of providing heat for transplants in a plant-growing frame is shown in Figure 4. The frame, made of 2-inch planking, has a back 24 inches high, and the sides slope down 6 feet to a front 15 inches high. The standard length is 12 feet, but it may be shorter if desired. Glass windows 3 by 6 feet cover the frame. The standard 6- by 12-foot frame will take about 1,000 plants spaced 2 inches apart. Electric light bulbs (100 watt) may be placed on the back or front inside surface for heating purposes.

Locate the frame on the south side of a building or other shelter. This protection will help maintain desirable temperatures of approximately 65°F. during the day and 55°F. at night. Ventilation is obtained by adjusting the windows. These may be removed entirely in warm weather, but should be left partly on during high winds to prevent damage to the plants.

Electrical heat may also be supplied with lead-sheathed cables placed 4 inches underground in the frame. This method is very costly compared with light bulbs. As a rule, underground heat is best for growing transplants of peppers, eggplant and melons. Top heat from light bulbs is better for tomatoes.

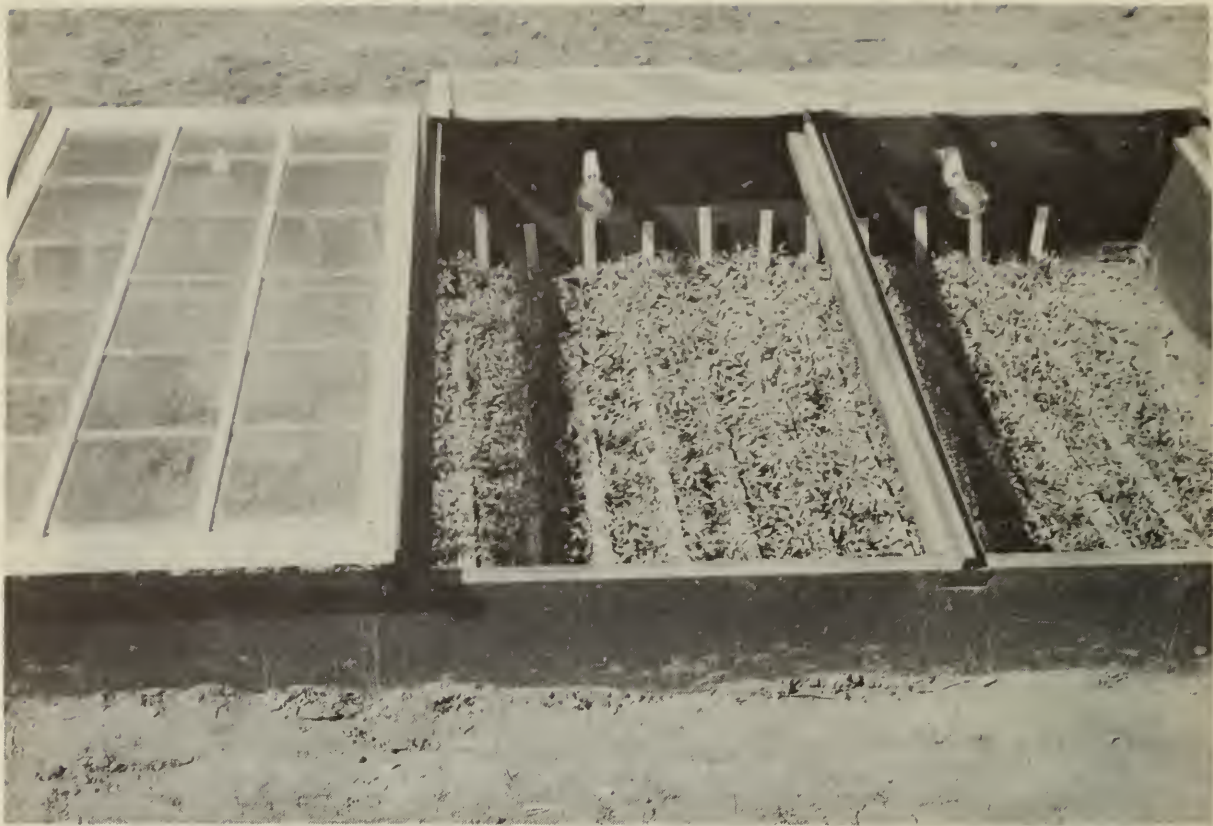


Figure 4. — A plank-frame heated with 100-watt incandescent electric lights is satisfactory for growing tomato seedlings.



Figure 5a. — Close-up of soil blocks made by the 'Quick Press' blocking machine.

Figure 5b. — The 'Quick Press' soil blocking machine showing mixed soil in flat hopper top right and blocks emerging from the 2-inch forms. Foot pressure is required to make the soil blocks.

Containers for growing transplants — Transplants may be grown directly in the soil at the bottom of the plant growing frames. However, containers such as fiber pots, soil blocks and wooden boxes are more convenient for handling or transportation. Fiber pots are available in 2¼- and 3-inch sizes. Soil blocks in similar sizes are made of compressed soil with a specially designed machine, which is available in several sizes.

Soil mixture for growing transplants — A good fertile soil mixture containing a moderate amount of humus and sand is essential for growing transplants; three parts garden loam, one part compost or rotted manure, and one part fine sand is satisfactory. Use this mixture in plant boxes, fiber pots, or for making soil blocks. Coarse gravel or straw placed in the bottoms of plant boxes and other plant containers ensures adequate drainage.

Sowing seed and transplanting — Sow the seed in boxes of soil for transplant production. Broadcast approximately 10 seeds per square inch or place in rows using 4 to 5 seeds per inch. Space the rows 1 to 1½ inches apart. All seeds should be planted shallowly, regardless of their size. Be sure to firm the soil, and then water thoroughly without disturbing the seed. A warm location with temperature at 70 to 75°F. is best for germination. Place two thicknesses of newspaper or a light gunny sack over the seeded boxes to restrict moisture loss, and remove as soon as the seed germinates. Guard the boxes against mouse damage.

Plants started in a bright south window in the house usually do not get the full benefit of the sun all day and, consequently, may grow spindly. However, a box in such a window allows the seed to be started early, and before the plant-growing frame can be readied outside.

Transplant seedlings when the first true leaves are formed. Use the same kind of soil mixture suggested for sowing the seed, and firm it before planting. Space the plants 2 inches apart if they are to be grown in a frame or in boxes; individual plants are placed in fiber pots and soil blocks. Use a round pointed stick, the size of a large marking pencil, to make the hole for the plant roots. Place the roots as deep as possible and press soil against their full length. A well planted seedling will break off before it can be pulled out.

Shade newly transplanted seedlings for several days to prevent excessive wilting. Water them thoroughly in the morning every day in warm, sunny weather and two to three times per week when it is cool. Ventilation is essential to dry off excess moisture and maintain a desirable temperature. Exposure to outdoor conditions should be increased daily with the approach of the outdoor transplanting period. Publication 1033 gives a description of growing transplants by the Morden system. Cool growing conditions promote good transplant production.

Transplanting

Transplanting is most successful if done during dull weather or in the evening. This limits wilting and encourages rapid rooting. Water the plants thoroughly several hours before setting them in the garden.

How to transplant — Plants that are tall or spindly should be set 2 to 4 inches deeper in the garden than the depth at which they grew in the plant containers. Firm the soil well around the roots. A cushion of soil placed against the roots followed by gentle pressure with the heel achieves this condition.

Leave a saucer-shaped depression at the base of the transplant to hold water and transplanter fertilizer solution. One watering is enough under most conditions.



Figure 6. — A 'Hotkap' and 'Hotent' in position showing ventilation openings.

Special plant protectors — Newly set transplants benefit by protection from wind, drifting soil, frost and early season insects. Specially made plant protectors also permit transplanting earlier than usual and result in earlier plant maturity. This is a definite advantage for tomatoes, eggplants, peppers and melons. Several types of economical and satisfactory protectors are available, including the waxed paper type known as the commercial Hotkap or Hotent.

Ventilation is important for greatest efficiency. Cut an opening in the paper protector, approximately 2 inches square or triangular, near the top and on the side away from prevailing winds. In hot weather, over 80°F., the top should be opened entirely to prevent plant damage.

Sowing Vegetable Seed

Several different kinds of vegetables, each with its own particular seasonal requirements, are usually planted in the prairie garden, and best results are

obtained when these requirements are met. For example, parsnips germinate slowly and should be sown as early in the spring as possible. Peas require cool soil conditions for good growth and should also be planted at this time. Beans, cucumbers and melons thrive only when planted in warm soil. Consult Publication 1033 for recommended seeding and planting dates of various vegetables in the Prairie Provinces.

How to plant the seed — Straight garden rows are pleasing to the eye and facilitate cultivating and other garden chores. A strong, taut cord is essential for making straight rows. Walk backwards on top of the cord (Figure 7) and use a rhythmic swing of the triangle hoe to make a straight seed trench. The depth of the trench will depend on the size of the seed. Carrot, onion and lettuce seeds require a shallow trench $\frac{1}{2}$ to $\frac{3}{4}$ inch deep. Sweet corn, beans and peas are sown in trenches $1\frac{1}{2}$ to 2 inches deep.

Draw the dry layer of top soil aside with the garden rake to expose the moist subsoil for the trench (Figure 7). In this way the seed can be planted in moisture to insure prompt germination — an advantage in a dry season.

Garden Activities in Summer

Cultivating — To mellow crusted soil and destroy weeds are the most important objectives in cultivating a garden. Cultivate as soon as the soil surface has dried after a rain or an irrigation. The best control of weeds is obtained by cultivating when the seedlings emerge, usually during the last week in May and the first two weeks in June. Cultivate shallowly at all times, particularly after June 15 when the feeding roots of the vegetable plants are close to the soil surface.

Chemicals recommended for weed control in commercial vegetable growing cannot be used satisfactorily in the home garden. These selective weedicides are practical only in large fields of one vegetable. A chemical that is safe for one kind of vegetable may severely injure or destroy another kind in close proximity, or in a row adjacent to the treated one.

The seven-sided flat hoe shown in Figure 8 and the Dutch hoe are good hand tools for the garden. The manually-operated revolving mulcher does the job faster between the vegetable rows. Motor-powered tools such as the mulcher shown in Figure 9 are excellent in a large garden, or where the cultivating work must be done quickly.

Thinning — Enough seed should be sown to ensure a good stand of plants. Thin the seedlings later to provide adequate space for normal plant development. This should be a gradual process beginning with an inch spacing between seedlings when the plants are 2 to 3 inches high, and increasing the spacing as they grow. Make the final distances between plants conform to the recommendations in Publication 1033.

Thinning is hand work. Pull out the entire seedling including the root, to prevent regrowth. Onion seedlings break off easily and will grow again to compete with the un-thinned plants. Softening the soil by watering or irrigating, or delaying onion thinning until immediately after a soaking rain has given good results.



Figure 7. — Sowing vegetable seed in moist soil after the dry top soil has been drawn aside will promote rapid germination.

Figure 9. — The revolving mulcher adapted to the one-wheel tractor affords rapid surface cultivation in the large garden.

Figure 8. — The seven-sided flat hoe is very effective for shallow or surface hoeing.

Figure 10. — Straw mulch is placed around the seedling plants to a depth of 6 inches and in a strip 18 inches on either side of the row.

The roots of vegetable plants that remain may be disturbed by thinning, and the adjacent soil loosened so much that their growth is hampered. Watering thoroughly soon after thinning tends to decrease this effect.

Mulching — Covering the soil surface between the vegetable rows with fibrous mulches or plastic sheeting can be very beneficial. This will restrict soil moisture loss, modify soil temperatures for vegetable plants with special requirements, and control weed growth generally. Good results have been obtained with fine cereal straw, sawdust, and old manure. Both black and clear plastic sheeting have proved useful in some areas.

Sawdust and fine straw mulches 6 inches deep are excellent for asparagus, tomatoes, late cabbage and cauliflower. Place the straw mulch over the asparagus rows about May 10th in such a way that the tips will emerge through the material. The soil must be warm before tomatoes are mulched; therefore, the straw is placed around the plants about July 15th at Morden. Late cabbage and cauliflower are mulched at transplanting time or when the plants are 4 inches tall, if grown from seed sown in the garden. Early maturing vegetables, such as lettuce, radishes, spinach and early cabbage, do not benefit from mulching because they

are harvested in June and early July, before the mulch has had time to become effective. The greatest advantage of mulching is that it modifies the high heat and drouth of mid-summer.

Watering and irrigating — The best quality and yield of vegetables depend on an adequate and uniform soil moisture supply. Provide water for the garden, if possible, when it is needed. Several methods may be used.

Empty gallon tins with perforated sides will give good results. These are sunk into the ground close to the vegetable rows and filled occasionally with water, especially when the plants approach full development. The tins must be put in place at seeding or transplanting time. Another useful method in dry localities is to place perforated garden hose under the soil surface adjacent to the rows of plants. A five gallon container attached to one end of the hose is filled occasionally with water. Rain water or dugout water is best; hard well water high in alkaline salts or water chemically treated for softening is undesirable.

Irrigation is the best method of watering a garden. Sprinkler type irrigation provides the most economical use of a limited water supply, and the water can be applied without disturbing the plants or soil, as in furrow irrigation. It is also useful for watering steeply sloping land. In dry weather, irrigation benefits germinating seed and refreshes transplanted vegetables.

Timeliness of application is important when watering plants. Normally, water is required before the plants wilt or show evidence of moisture deficiency. Determine the moisture needs in the garden by digging a handful of soil from root depth and as near as possible to the plants. If the soil can be balled with hand pressure and remain intact as pressure is released, the available moisture is considered adequate for plant growth. Irrigate to moisten the soil to full root depth. This involves moistening soil according to plant development: 4 to 5 inches deep in June and 8 to 10 inches in early August. More information concerning garden irrigation is available in Canada Department of Agriculture Publication 851.

Harvesting and Storing Vegetables

Proper methods of harvesting and storing are essential to get the most out of a home garden. The time of harvesting is also important to obtain vegetables that are tasty and nutritious. Learn to recognize prime maturity (the stage of plant growth at harvesting that gives vegetables in best condition for table use or canning) to get the best results from a garden.

The keeping quality of vegetables depends largely on the care used in harvesting. If they are not wilted and are free from bruises and skin-breaks, the vegetables will keep better in storage.

Time to harvest — Vegetables used in summer, such as peas, beans, sweet corn, radishes, beets, carrots and cucumbers, are of best quality before they attain full size. Peas in the pod just short of full size are sweetest and have the best flavor. A dull yellow kernel color at the tip of the sweet corn ear indicates high sugar content and good quality. Green beans have good flavor and texture when the seeds have just begun to form and the pods are approximately three quarters of their mature size.

Root vegetables are most tender when about two-thirds grown. A diameter of 2 inches is best for beets and 1 to 1¼ inches for carrots. Thumb-nail size is preferred in roots of most radish varieties.

The top quality stage of vining-type vegetables may be difficult to determine. Small size and an immature condition indicates optimum quality in vegetable marrow and summer squash. Full size and a hard rind are essential in mature, late-fall type pumpkins and squash. Succulent cucumbers that are approximately three-quarters full size are best for fresh use. Sizes required for dill or gherkin-type pickles depend on personal preference. In muskmelons a pleasant aroma and easy separation of the fruit from the vine indicates desirable maturity. Complete ripeness in watermelons is indicated by a dull, thudding sound when the fruit is snapped with the thumb and finger. A high-pitched, metallic sound suggests immaturity. Fully ripe watermelons also produce a dull, cracking sound when pressed firmly with claspings hands. A recent plant-breeding innovation, the Golden Midget watermelon, turns a golden yellow color as it ripens.

Complete maturity, indicative of the best flavor in tomatoes, may be difficult to determine in varieties such as Meteor, Monarch, Mustang and Manitoba. While immature, these have a uniform pale green color, and the change to pale red may be mistaken for ripeness. Six days of warm weather after the first change to red color are required to produce satisfactory maturity in these.

Onion plants in various stages of development are useful for home consumption. The young plants are excellent for greens and bulbs of any size may be used in cooking. In the immature stage, onions must be used immediately or held temporarily in cold storage. Bulb maturity in the fall is indicated when the plants fall over naturally. Forcing the bulbs to mature by tramping the tops is an undesirable practise, because it encourages neck rot disease. An adapted variety ripens naturally late in August. The bulbs will continue to enlarge after the tops have fallen over. Pull the onions in early September, before frost occurs, and cure in a dry location.

Late cabbage, rutabagas and parsnips may be used when they attain usable size, but should not be dug for storage until they have had a sharp frost. Parsnips may be left in the garden until the ground freezes in the fall and if covered with straw they can be dug as required late in the season. Late harvested parsnips have the best quality.

Methods of harvesting — Careful harvesting and handling are important in preparing vegetables of desirable quality. Peas and beans are easily damaged by careless picking which will impair continuous production. Hold the pods in one hand when picking and steady the plant with the other, as illustrated in Figure 11. High production from peas and beans is encouraged by harvesting all the pods as soon as they are ready for use.

Remove the stems from tomatoes while picking. If they are left on, adjacent fruits may be punctured when placed in the basket and spoilage caused.

Root vegetables such as carrots, beets and potatoes may wilt when harvested in warm and dry weather. Choose a cool, cloudy day for this work.



Figure 11. — A good method of picking peas is to hold the vine in one hand and pull the pods with the other.

'Greening' of potatoes and carrots should be prevented by hilling them with soil in mid-August.

Pumpkin, squash and other heavy vegetables, as well as sacked potatoes, carrots and beets, should be handled carefully to avoid crushing or bruising. Rough treatment impairs quality and promotes storage rots.

Storage — A part of the basement in an average home can be remodelled for use as a vegetable storage. Provide good wall insulation and adequate ventilation. A free flow of outside air into the storage is essential until cold weather occurs. Darkness and a constant temperature of approximately 40°F. in the storage are desirable.

Covering is not required in storage for potatoes, rutabagas and cabbage. Open-bin storage is satisfactory. However, carrots, beets and parsnips keep



Figure 12. – Vegetables trimmed and ready for storage.

better when packed in dry sawdust. At Morden the roots are placed in layers 2 inches deep in bushel size boxes. Each layer of roots is divided by a layer of sawdust 3 inches thick. The final covering of sawdust should be at least 5 inches deep.

Vegetables are placed in two storage categories according to their humidity requirements. Potatoes, carrots, beets, parsnips and cabbage must have a relative humidity of 80 to 85 per cent for good storage. Onions, pumpkins and squash must be kept dry. Cure the last three in a temperature of 75°F. and in moving air for two weeks just after harvest; this helps maintain good quality during long storage at 40°F.

The gardener with special problems related to the suggestions made in this bulletin can write to or visit the Canada Experimental Farm, Morden, Manitoba, or he may get in touch with the Agricultural Colleges, District Agricultural Representatives, and the other experimental farms in the Prairie Region.

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